Summer 2008 Electricity Supply and Demand Outlook:

Demand Forecast and Preliminary Summer 2007 Temperature-Load Assessment

January 16, 2008

Lynn Marshall

Demand Analysis Office

Introduction

- The forecast used for this supply demand outlook is the *California Energy Demand 2008 - 2018: Staff Revised Forecast*, publication # CEC-200-2007-015-SF2.(Nov. 2007)
- That forecast incorporates analysis of 2006 load and temperatures from *Staff Forecast of 2008 Peak Demand*, publication # CEC-200-2007-006-SF. (June 2007)
- Today we present a preliminary assessment of 2007 loads and temperatures in the CAISO Control Area.
- Staff will prepare a similar analysis for individual LSEs and other control areas as more detailed load data becomes available.

Comparison of Forecasted, Actual and Weather-Adjusted Peak Demand

(MW)

		2007 Forecast	2007 Actual	2007 Weather-Adjusted (preliminary)	2008 Forecast
Total NP15		21,406	21,300	21,314	21,671
	SCE Transmission Area	23,638	23,832	23,321	24,035
	San Diego Gas & Electric	4,506	4,601		4,568
Total SP 15		28,144	28,433		28,604
CAISO Noncoinc. peak			49,733		
CAISO Coincident Demand		48,363	48,615	48,911	49,071
Turlock Irrigation District Control Area		554	604		563
SMUD Control Area		4,665	4,673*		4,727
LADWP Control Area		6,285	6,738		6,317
Imperial Irrigation District Control Area		1,032	995*		1,063
Statewide Noncoincident Demand		62,085	62,743		62,946
Statewide Coincident Demand		60,599	NA		61,439

*Preliminary data - not yet confirmed.

2007 Loads and Temperatures

CAISO Results

- 2007 daily peaks were consistent with what staff's estimates temperature-load response would predict, given observed temperatures and forecasted growth.
- Weather adjusted 2006/2007 CAISO growth in peak demand was 1.5%. Forecasted growth was 1.42%, or 730 MW.
- Summer 2007 hot spells centered around holiday periods (July 4th and Labor Day); the remainder of the summer was relatively mild.
- 2007 CAISO peak was driven by hot temperatures in southern California.

NP15 Results

- Estimated 2007 peak is within ½ percent of forecast. Estimated 2006/2007 weather-adjusted load growth is 1.3 percent (240 MW), the same as the forecast growth rate.
- These loads include PG&E, northern California POUs and other LSEs, and DWR north.
- DWR North load curtailments are reported by PG&E.

SCE Area Loads

- The estimate of weather adjusted 2007 peak is 300 MW below our forecast for 2007, but this reflects lower DWR loads than projected. The staff forecast assumes average hydro condtions.
- Adjusting for actual pumping load, the weather-adjusted peak is with ½ percent of the staff forecast.

Weather Normalization Methodology

- Staff uses hourly load data, reported curtailed load summer afternoon weekday peak and temperature to estimated peak demand as a function of temperature:

Predicted MW =

a +b*(Lagged Daily Max. Temp.) +c*(Temp. Spread)

  - Load data are CAISO EMS hourly loads for NP15, SCE transmission area, and SDG&E area.
  - Temperature data is from National Weather Service (NWS) sites for PG&E and SCE.
  - Demand response and interruptible impacts from IOU monthly reports.

Weather Variable Definitions

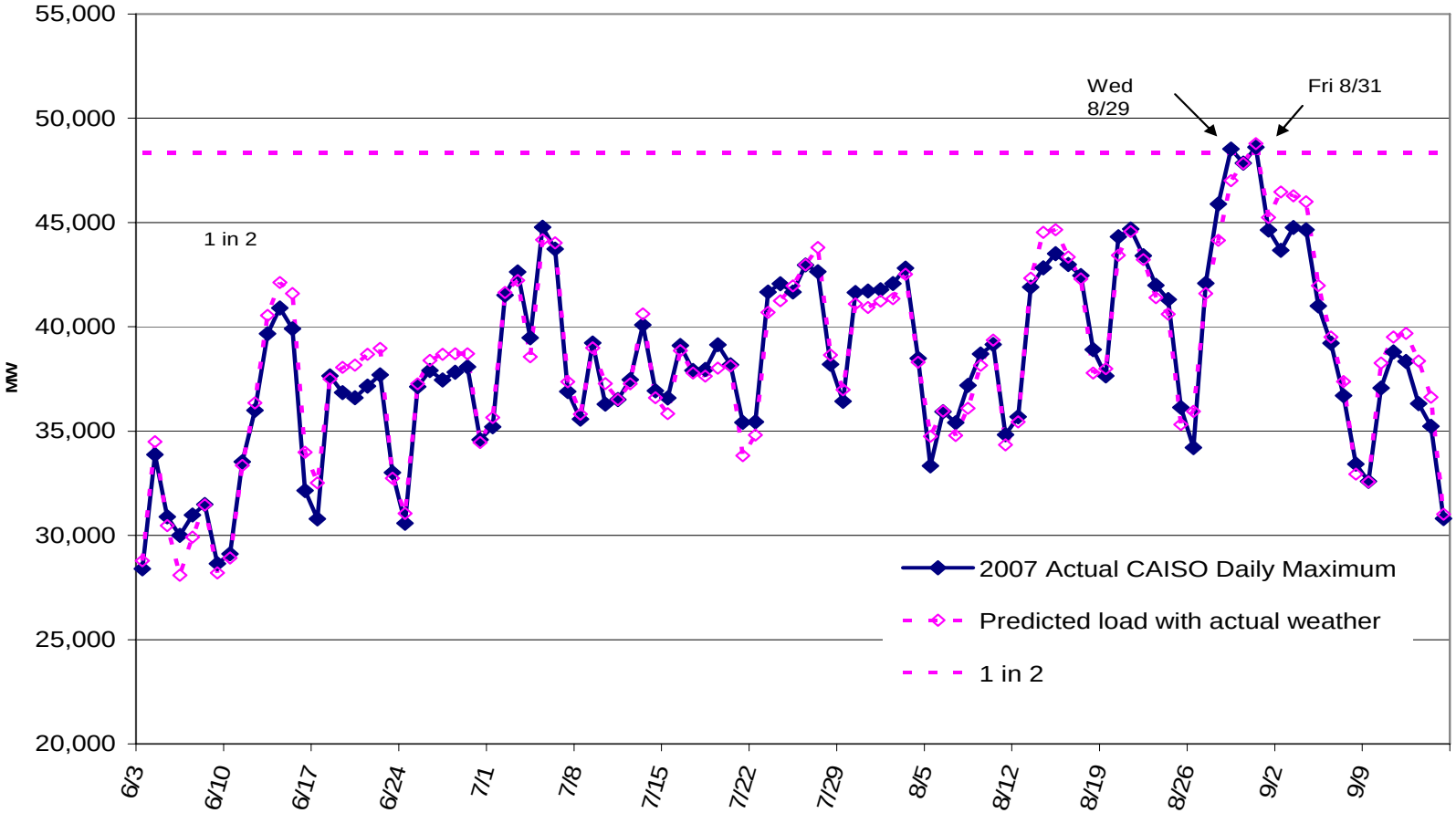
- 3-day weighted maximum temperature (Max631)
  - Used to account for heat build-up
  - Max631 = .6*(max current day) +.3*(max day-1) + .1*(max day-2)

Utility	Station/Weight				
PG&E	Ukiah	Sacramento	Fresno	San Jose	San Francisco
	0.067	0.169	0.413	0.282	0.069
SCE	Fresno	Long Beach	Burbank	Riverside	
	0.062	0.324	0.243	0.371	
SDG&E	Lindbergh Field	Mirimar	El Cajon		
	0.333	0.333	0.333		
LADWP	Long Beach	Burbank			
	0.42	0.581			

Weather Variable Definitions

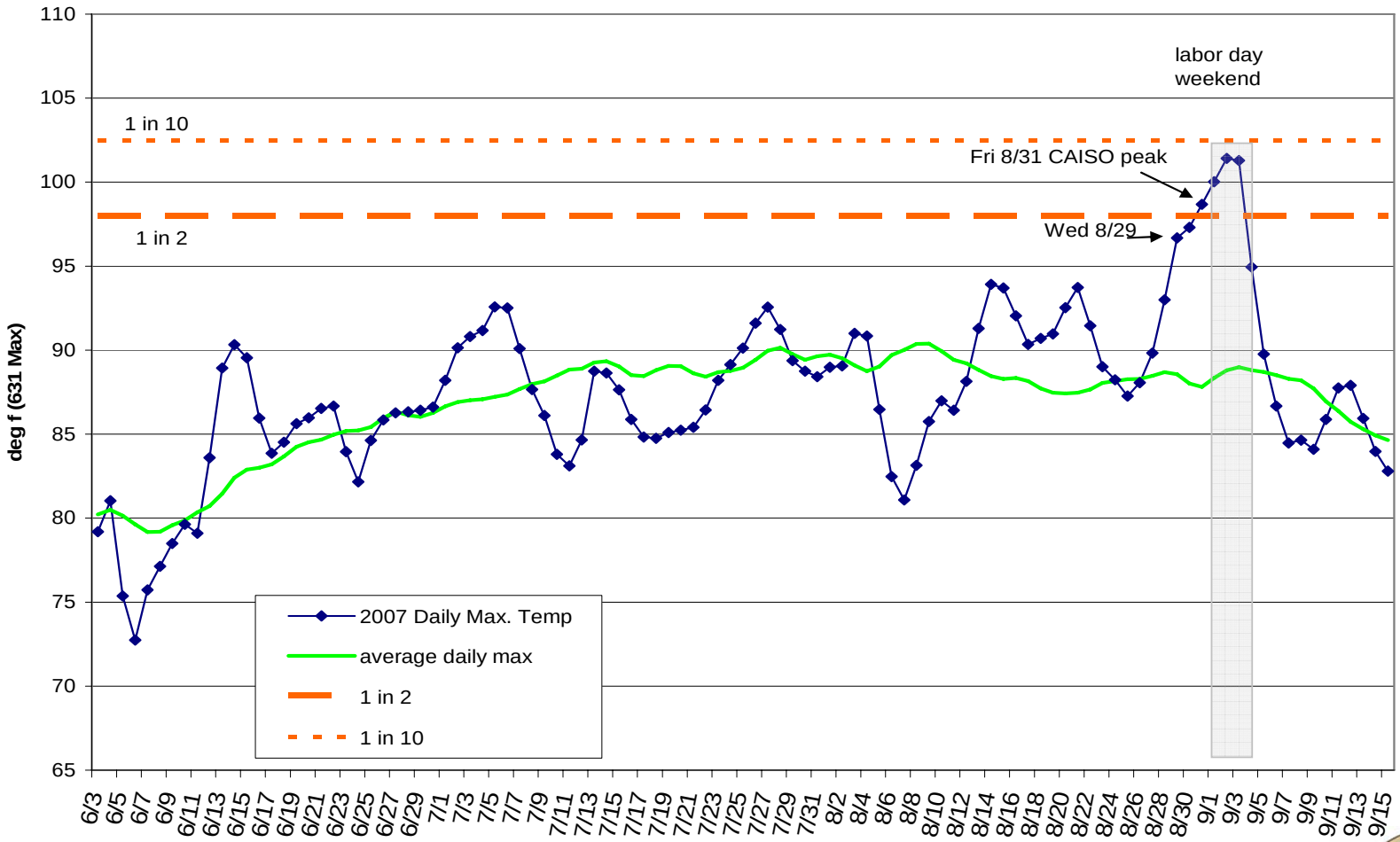
- Daily temperature spread or diurnal variation (Divar)
  - Used as a proxy for humidity
  - For a given maximum temperature the lower the temperature spread the higher the humidity
  - Divar = daily maximum temperature – daily minimum temperature
  - Divar is not lagged because it is meant to capture the actual operating characteristics of a/c units (energy used to remove water from air).

2007 CAISO Area Daily Peaks: Actual and Predicted



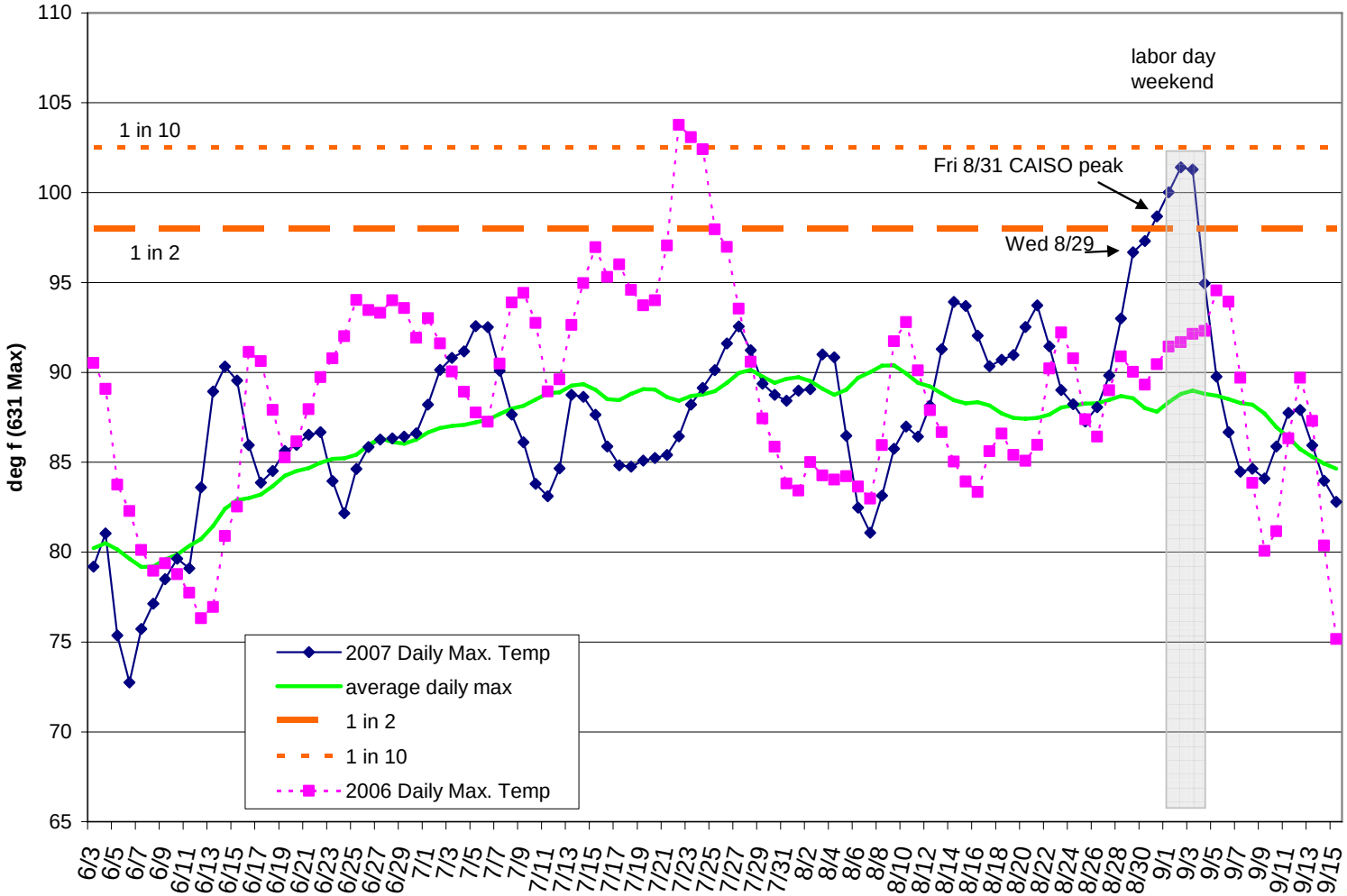
Summer 2007 Daily Temperatures in the CAISO

(Composite Lagged Daily Maximum)

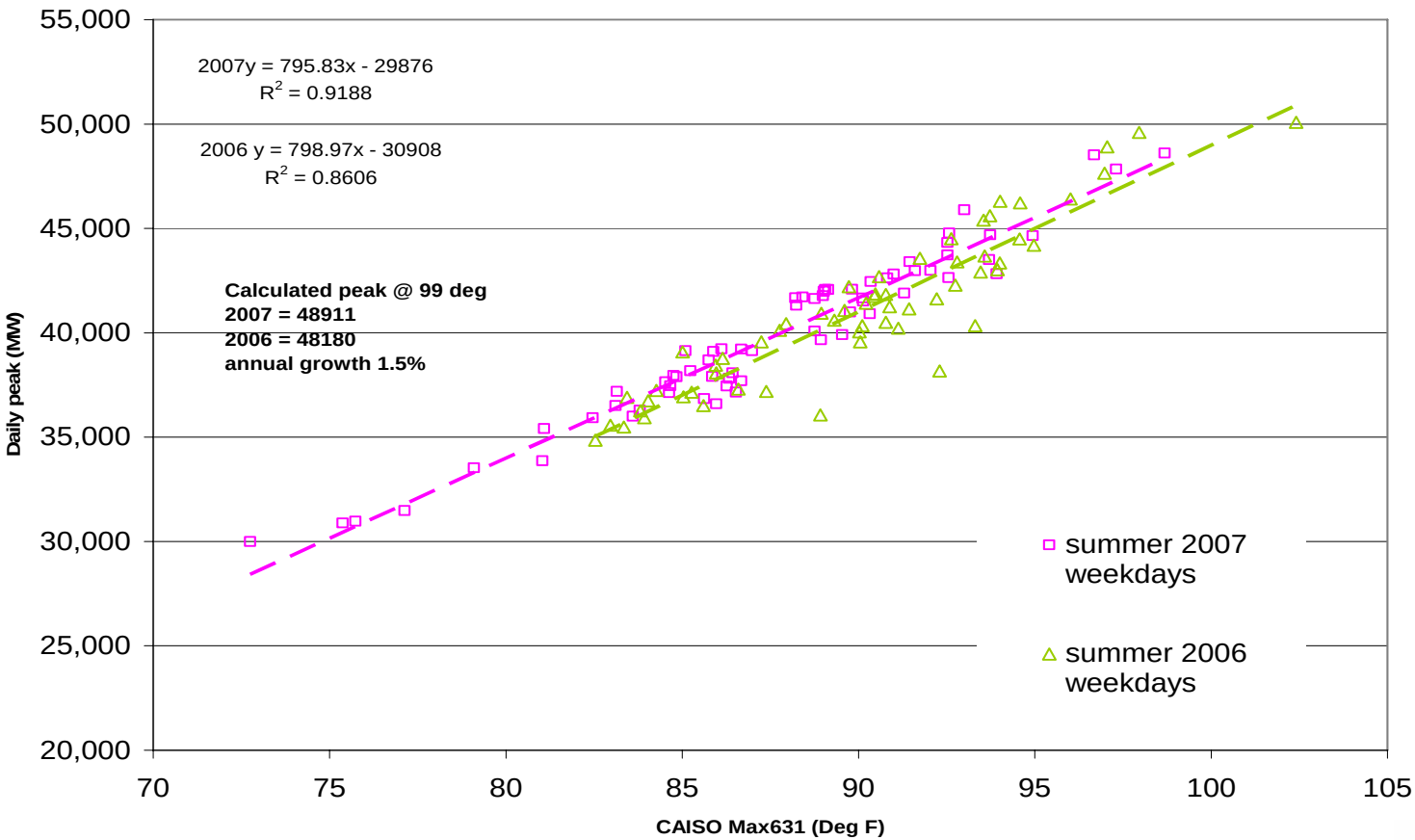


Daily CAISO peak temperatures were below 1 in 2 levels until the end of summer.

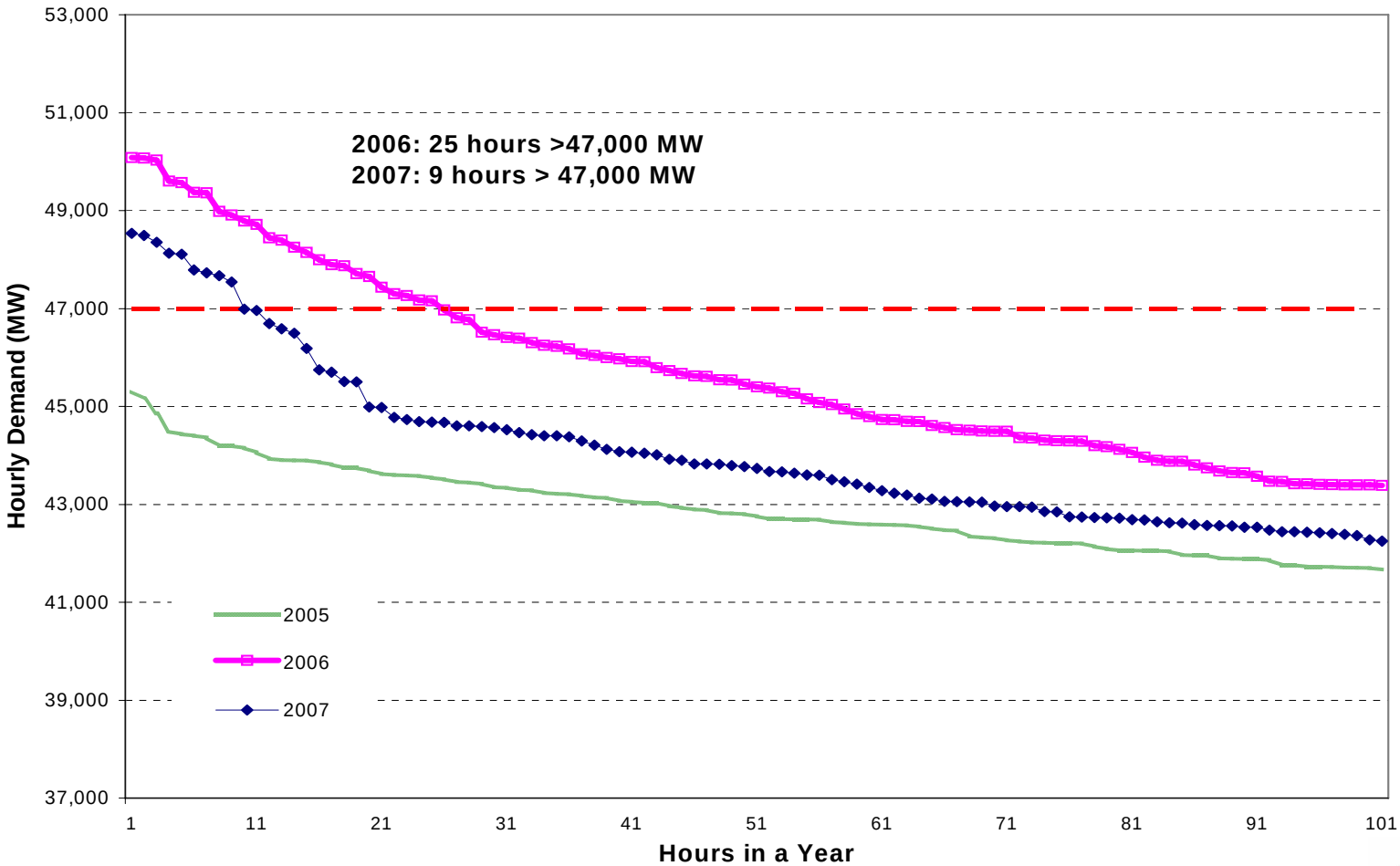
CAISO 2006-2007 Temperature Comparison



CAISO 2006-2007 Summer Weekday Temperature and Afternoon Peak Comparison

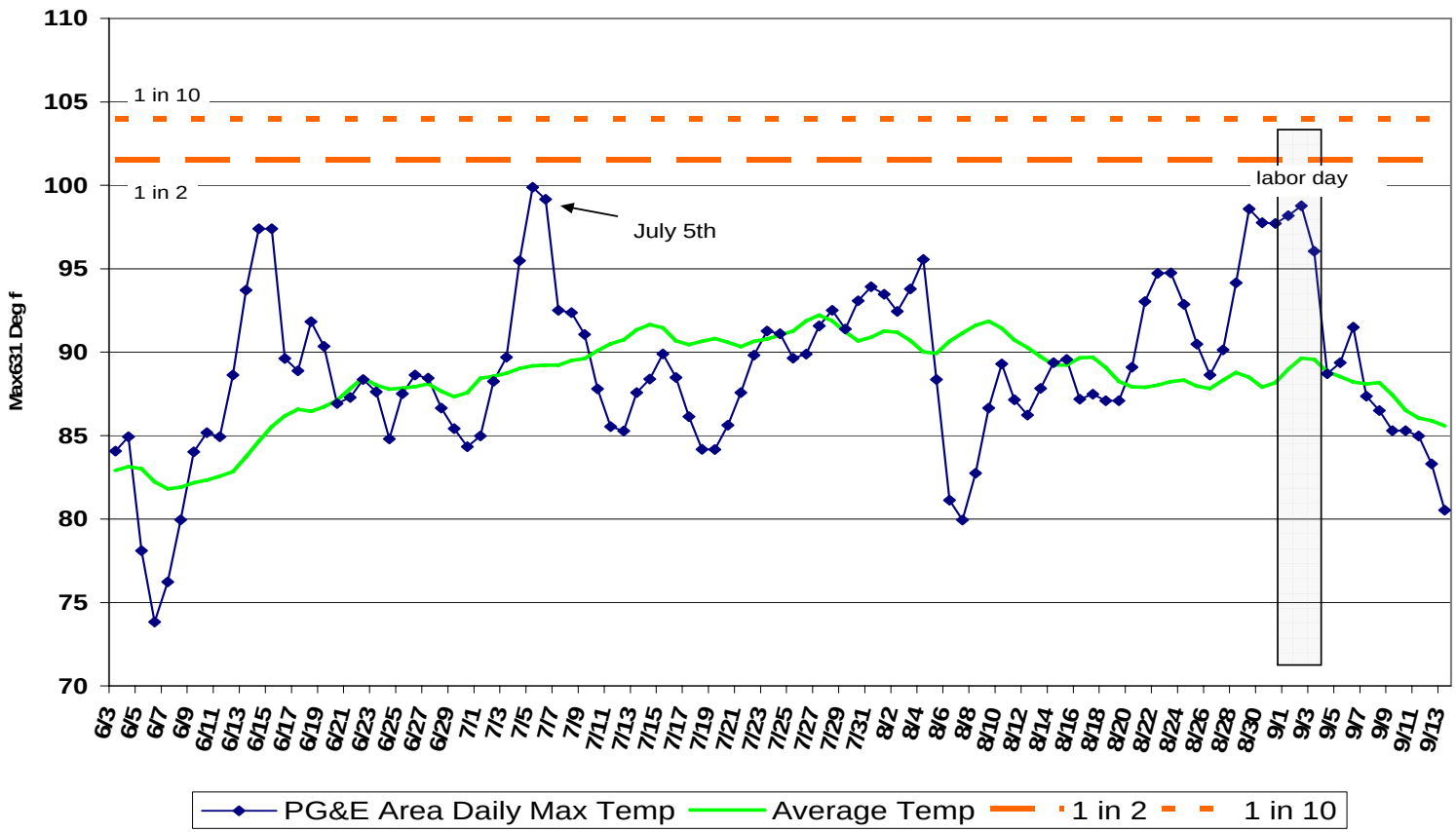


2005-2007 CAISO Hourly Demand -Highest 100 Hours



Source: CAISO/ FERC Form 714

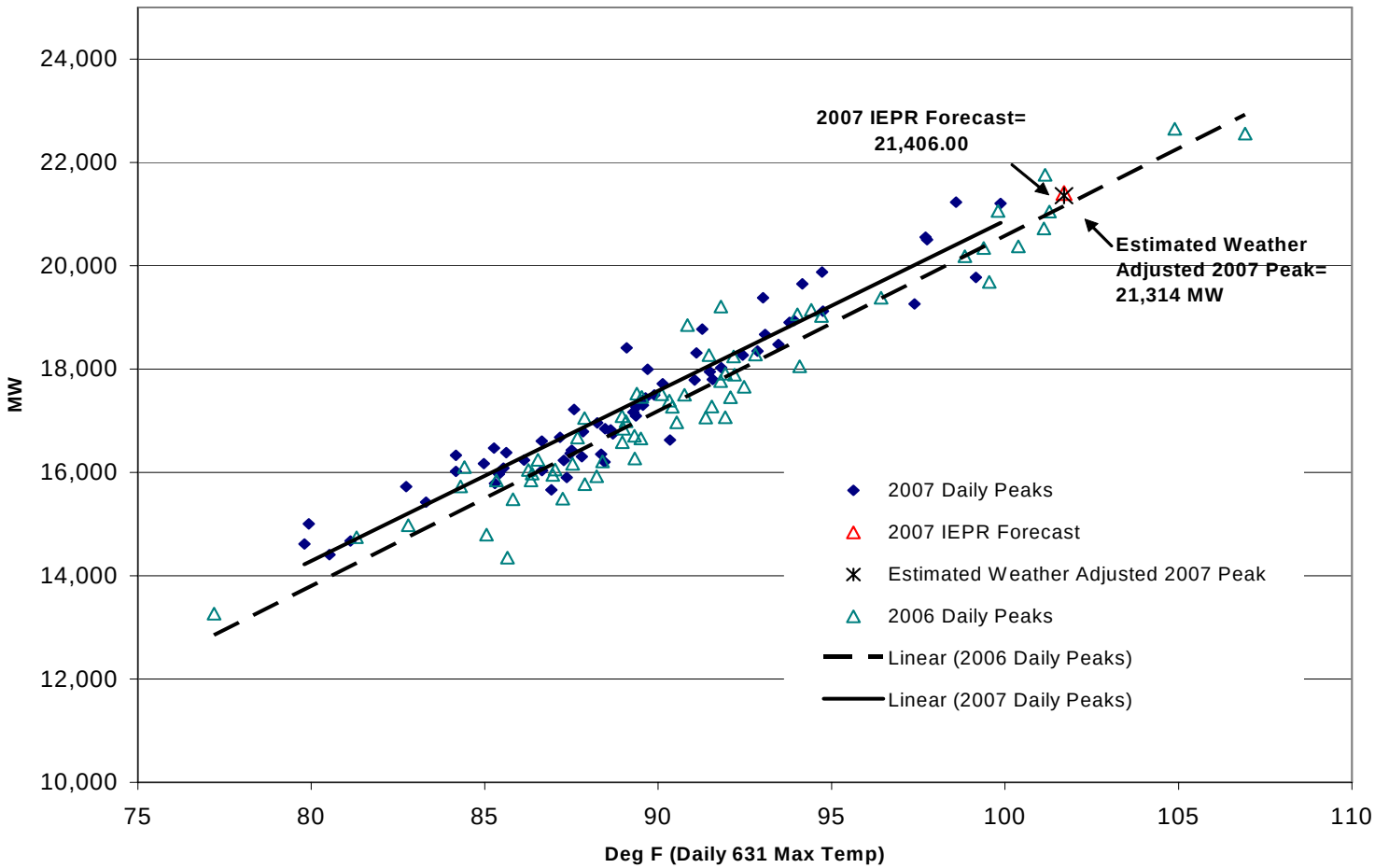
PG&E Area 2007 Daily Temperatures



PG&E summer peak temperatures occurred July 5th and 6th.

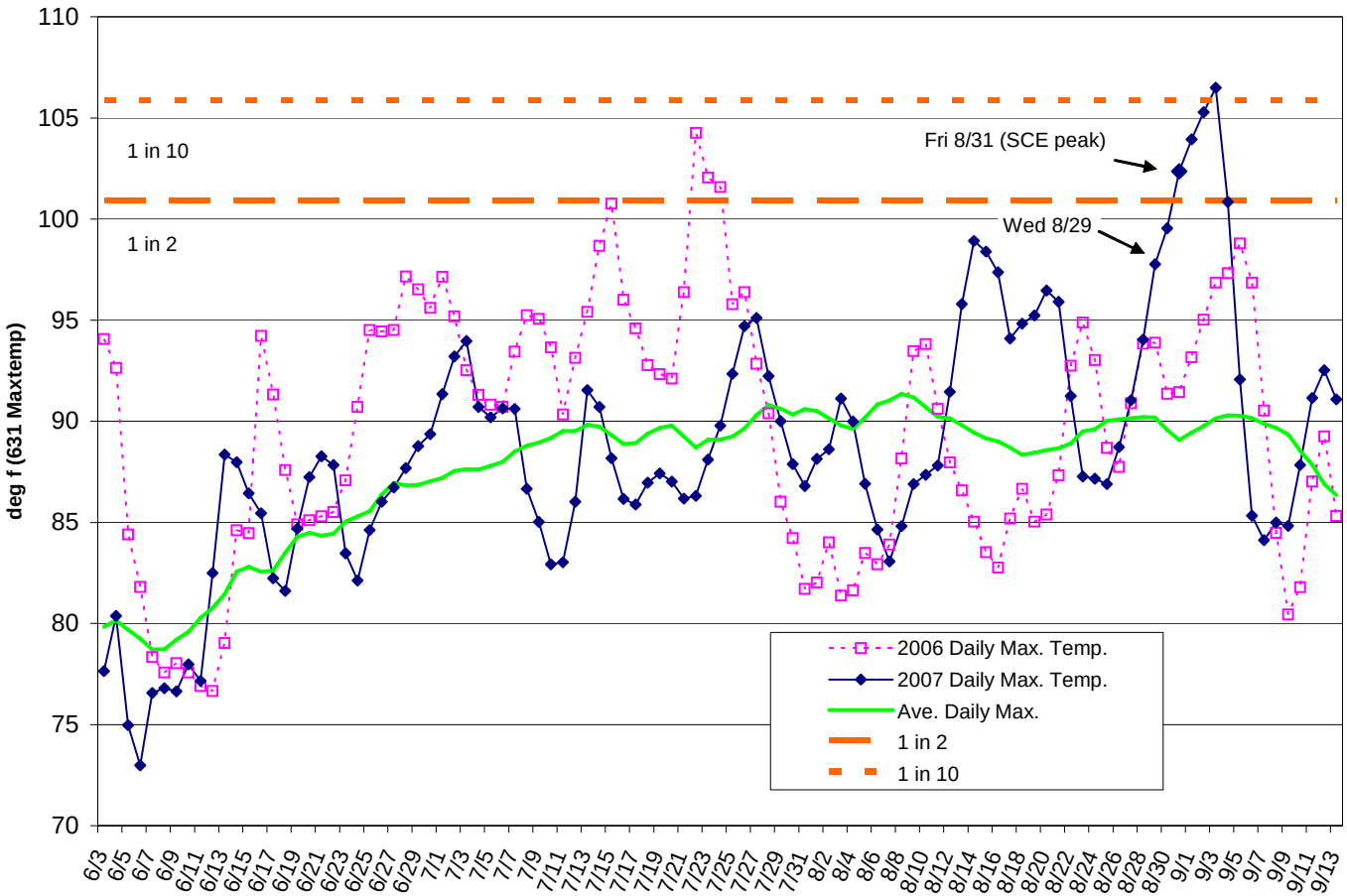
These temperatures were below 1 in 2 level.

NP 15 2006-2007 Daily Peaks & Temperatures



Weather-adjusted 2007 NP15 peak is within ½ percent of forecast. Estimated 2006/2007 load growth is 1.3 percent (240 MW), the same as the forecast growth rate.

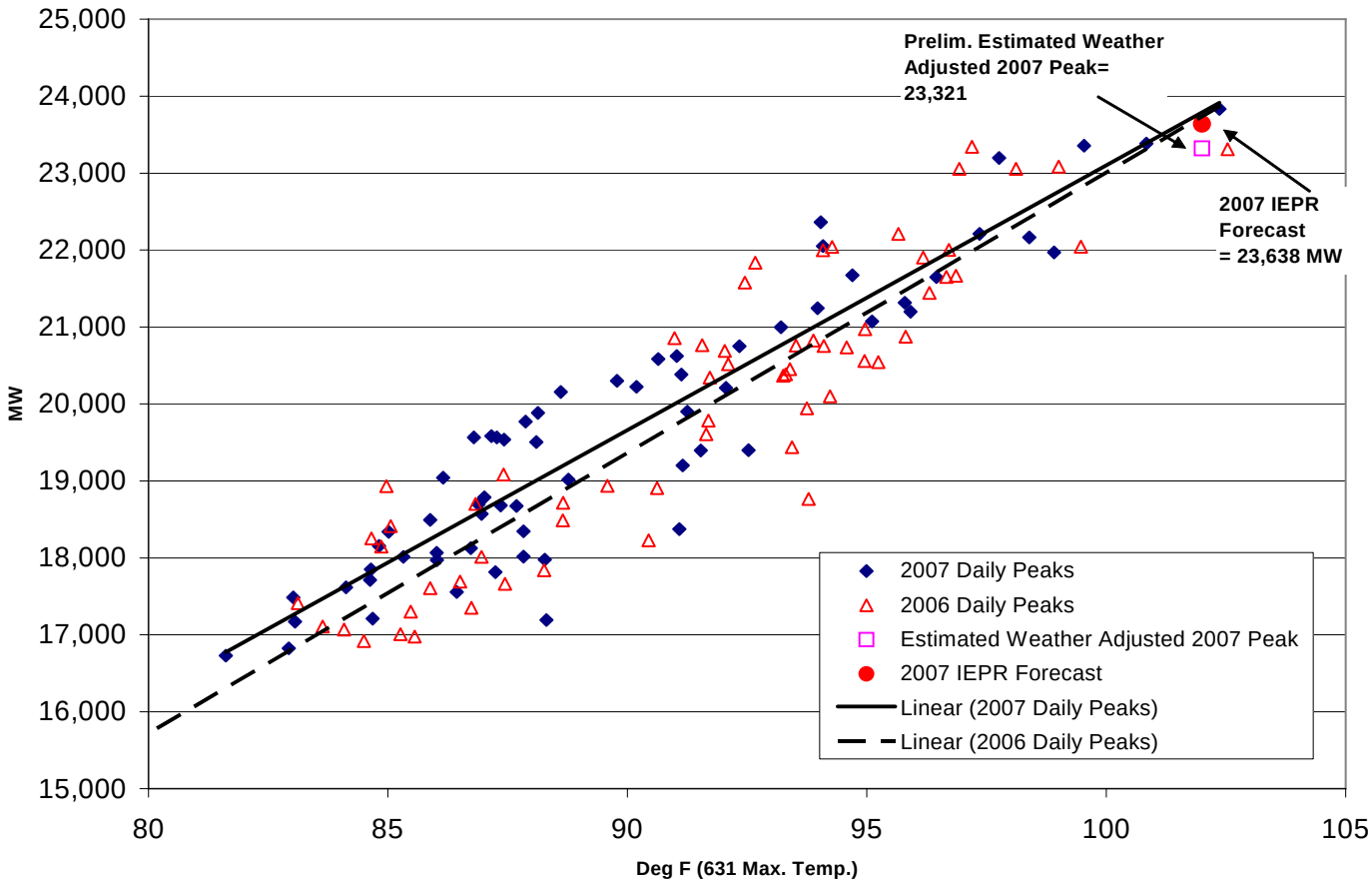
SCE Area 2006-2007 Daily Peaks & Temperatures



SCE peak temperature occurred on Labor Day.

Day of SCE peak 8/31 was above 1 in 2 temperature

SCE Transmission Area 2007 Daily Peaks and Temperatures



Weather adjusted SCE peak is 300 MW lower than forecast, reflecting lower pumping loads than assumed.